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Cook Inlet Gas Considerations

Testimony to Joint Committee on Natural Gas Pipelines

By
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Mr. Chairman, for the record, my name is Scott Jepsen. I am employed by Phillips, as the Manager for our Cook Inlet assets. I reside in Anchorage, Alaska. Thank you for giving Phillips an opportunity to provide its perspective on the matters requested in the attachment to your October 22, 2001 letter.

For clarity, my testimony is structured in question and answer format, addressing the 10 questions asked in your letter. These answers also provide our overall perspective on Cook Inlet, as requested in your letter.

1) Provide the committee with an update on Phillips' LNG facility activities and its Cook Inlet gas field operations.

Phillips is the operator of the Beluga River Field and the North Cook Inlet Unit (NCIU). Phillips' interest in the Beluga River Field is 33% and in the NCIU is 100%. The Beluga Field primarily provides gas to the local utility market with some sales of gas to the Agrium urea plant. Total gross yearly production out of Beluga is approximately 38 BCF per year. Gas from the North Cook Inlet Unit is produced from the Tyonek Platform. Currently, 100% of the gas from Tyonek is used to supply the Phillips portion of the feed requirements to the Phillips/Marathon LNG plant. The yearly production from the NCIU is approximately 53 BCF. Phillips' plan for these fields is to maintain deliverability within economic constraints. Phillips also has a 50% interest in the Moquawkie gas field, a small, one well, undeveloped, 1998 discovery on the west side of Cook Inlet near the Beluga River Field.

The Kenai LNG plant is jointly owned by Phillips (70%) and Marathon (30%). Total feed to the plant from Phillips and Marathon is approximately 77 BCF per year. The plant produces on average about 1.5 million tons per annum of liquefied natural gas which is sold to Japanese utilities. Our current plans do not envision any significant changes to the operation of the LNG facility.

2) What is the expected length of time Phillips plans to continue current levels of LNG production under the most recent production estimates from natural gas reserves in the Cook Inlet?

On April 2, 1999, Phillips and Marathon were granted a renewal of the export license for the Kenai LNG plant for the period April, 2004 to March, 2009 by the U.S. Department of Energy, Office of Fossil Fuels. For that renewal, a thorough analysis of reserve adequacy was conducted and substantial hearings were held. The results of that process demonstrated that reserve capacity was sufficient for LNG exports to continue through the approved period. It was also found that export was consistent with the public interest and would not result in a local or regional gas supply shortfall on an annual basis.

Phillips hopes to operate the Kenai LNG plant well past 2009. However, it is premature to determine whether we will seek another extension, but if we do, there will be adequate gas reserves to do so, as well as provide for the state's needs.

3) What, if any, expansion plans are being made in the event that a natural gas supply is made available from the North Slope?

Phillips is focussing its ANS gas commercialization efforts on a pipeline to the Lower 48/Canadian markets.

On the general topic of LNG, we would also note that Phillips has been part of the Alaska North Slope LNG Sponsor Group since its inception in 1999. A detailed review of the Sponsor Group work was given to the Senate Resources committee in April, 2001. That review indicated that the Nikiski area and a pipeline from Prudhoe Bay would provide a technically feasible and permittable LNG plant site/route configuration. However, a cost competitive, economically viable Alaska LNG project has yet to be identified.

4) Do you plan to apply for an extension of your LNG export authorization past 2009 if North Slope gas is not available? Is your answer different if North Slope gas were available?

As mentioned in my previous answer, Phillips would like to extend the operation of its LNG operation past 2009, if the dedicated gas supply available to Phillips and Marathon in Cook Inlet allows us to do so. However, we do not see that an export license extension is necessarily contingent on ANS gas being available in the Cook Inlet area.

5) What is your assessment of the Japanese LNG market?

The East Asian LNG market is fiercely competitive and likely to continue to be so throughout the remainder of the decade. In round numbers, we see about 60 to 75 million metric tons per year of potential new LNG supply chasing after 20 to 40 million metric tons per year of new LNG demand through 2010. As a result, recently we have seen prices for new contracts trending downward and pressure for shorter contract periods.

This reinforces the difficulties that an Alaskan LNG project faces in the East Asian market over the next decade. While the market for new LNG is expected to grow, there is an over abundance of lower cost supply and in smaller increments compared to new LNG that would be delivered from Alaska.

That said, Phillips will continue to monitor and evaluate this situation for possible opportunities for Alaskan LNG.

6) What is your current assessment of proven developed gas reserves, proven undeveloped gas and unproven probable gas reserves in the Cook Inlet? What is your current assessment of undiscovered gas resources in the Cook Inlet?

For competitive reasons, Phillips does not release its internal assessment of reserves for fields or basins. However, we can cite several published reports that provide estimates of Cook Inlet reserves. Schlumberger-Geoquest performed a study for Phillips/Marathon in support of the LNG export license renewal effort. The Schlumberger-Geoquest report

estimated that, as of 1/1/98, total remaining proven reserves in Cook Inlet stood at 3.3 TCF (cited in the application to Amend Authorization to Export Liquefied Natural Gas, Department of Energy, Office of Fossil Energy). Adjusting for estimated production volumes since then, 1/1/2001 proven reserves stood at around 2.7 TCF. The USGS has also estimated probable reserves at 1 TCF and possible reserves at 1.4 TCF (as reported in "A Review of Cook Inlet Natural Gas Supply and Demand", Northern Economics, 2001, p.8).

With regard to Phillips' assessment of undiscovered gas resources in Cook Inlet, one has to first step back a bit from the numbers. While the estimate of proven reserves is fairly precise, the assessment of possible or potential reserves is less precise. The only real significance of the USGS estimate is that it indicates we probably have not found everything there is to be found in Cook Inlet. The only way to know for sure is through drilling. Because of the historic overabundance of gas in Cook Inlet, drilling activity targeted at gas has not been as high as it might have been. The supply and demand relationship is starting to turn now, with the extreme supply overabundance relative to demand dropping to a level more comparable to the Lower 48. While some see this as a matter of concern, it is premature to think that the market will not react and fill in the supply opportunities as they arise. From an exploration and production point of view, this is really a time for optimism, not pessimism. Let me explain.

By 1970, gas reserves in Cook Inlet stood at about 8 trillion cubic feet (TCF) and production was about 145 billion cubic feet per year: thus the Reserves to Production ratio (R to P ratio) was about 55 years. As would be expected with such a high ratio, there was little incentive to explore for gas, since it would either be a long time before revenues would be realized for the additional, discovered gas or the gas would have to be sold at inordinately low prices.

Over time, the known Cook Inlet reserves have been slowly consumed. As indicated above, reserves are about 2.7 TCF, consumption is about 215 bcf/yr and the R to P ratio is just under 13 years. Theoretically, this would suggest that developed reserves will be exhausted in about 2014. However, in reality, this is a very normal situation in the natural resource industry. For example, the R to P ratio of the L-48 is about 7 years and it has roughly been at 7-10 years, with a slight decline, for the last 20 years. New resources have been added at about the same level as consumption. The market for gas and the increased demand spurs exploration and development.

In the past, the overabundance of gas supply in Cook Inlet has served as a disincentive for exploration. However, for the first time in about 30 years, a company that finds new gas can actually sell at least some of its potential production at a price that may yield acceptable rates of return.

In fact, Phillips believes we are beginning to see the early signs of a new phase of exploration and discovery. We have seen public announcements showing that gas activity has begun to pick up. Phillips and Anadarko had success in finding gas in the Moquawkie Field. We also note the public announcement that Nikolai Creek No. 3 has

been successfully recompleted and that Northstar Energy Group proposes a well to tap the North Fork gas field. Marathon and Unocal are actively exploring throughout the Kenai Peninsula. There is clearly a "renewal" of interest in gas exploration and production in the Cook Inlet area, and the results of that effort are beginning to be seen.

Exploration for oil is also on an 'upswing'. Forrest Oil has made an oil discovery at Redoubt Shoal and Phillips is drilling an oil exploration well near Anchor Point. While these oil fields may not add significant gas reserves, they do provide infrastructure that could lower the economic hurdles for additional exploration and development.

On the price side, Enstar has shown willingness in its more recent contracts to tie gas prices to widely accepted gas indices such as Henry Hub. While Cook Inlet is not connected to the Lower 48, receiving Lower 48 prices or better for Cook Inlet gas makes it easier to evaluate gas plays in Cook Inlet relative to other options available to potential investors.

Beyond these basic observations, there are other reasons for prudent optimism. First, seismic technology has progressed and should significantly improve exploration chance factors. Second, there are more players, some new, in the picture. Besides the historical players such as Unocal, Marathon, Chevron and Phillips, companies such as Northstar Energy, Forrest Oil, Anadarko, Aurora, Crosstimbers, Pelican Hill and Escopeta are investing in the Inlet. Clearly, the more players, the more likely that wells will be drilled and discoveries made.

In looking at Cook Inlet as typical of any large, prolific resource basin, there are a couple of characteristics that are common to all of these types of basins. First there is invariably a distribution of field sizes in basins that have been well explored. Second, there are normally cycles of discoveries based upon technology or play concepts.

I want to first take the topic of field size distribution. We know that, typically, naturally occurring phenomena, like hydrocarbon accumulations are distributed in what is technically defined as a log normal distribution. Simplistically, there should be a few giant fields and an ever increasing number of smaller fields. In Cook Inlet, almost all of the currently known reserves are contained in what industry would consider large or giant gas fields. These are fields with more than 1 TCF of initial reserves. These fields have long been regarded as 'accidental discoveries' made while exploring for oil. There has also been a sprinkling of relatively small discoveries in the 50 BCF or less range, which are an inevitable result of the exploration wells that have been drilled. What are undiscovered are the expected field sizes in between. As the incentive to explore for gas in Cook Inlet increases, there is a high likelihood that explorers will start to find these middle-sized fields. With higher prices and increased infrastructure, many of these fields could be economic and in aggregate, could contain relatively large amounts of gas.

Discovery cycles are also a common characteristic of basins like Cook Inlet. Typically, a number of discoveries are initially made in a basin based upon a particular geologic concept, often followed by a period of few discoveries. Almost invariably, there is a new

concept or a new technology that leads to a new round of discoveries. An example of this on the North Slope is the recent successes in NPRA. Although it may seem counter intuitive because of the long history of production in Cook Inlet, Cook Inlet may just be starting to come out of its first phase of discoveries. While many of the obvious targets in Cook Inlet have been drilled and technology will play a part in new exploration concepts, the lack of a market in Cook Inlet has kept operators from drilling some long known play concepts. This is another reason for optimism: there are drill ready prospects already out there.

In public forums, we often hear the concern that the Cook Inlet is "running out of gas". It strikes us that this assertion basically ignores the role that exploration is very likely to play in Cook Inlet. As long as the industry has incentive to drill, we believe the next five to ten years will yield much about the potential of the basin.

7) What are your current exploration plans within and outside known producing fields in the Cook Inlet? What is your proposed Cook Inlet drilling budget for the next five years?

As I mentioned in my response to the last question, Phillips is drilling an oil exploration well near Anchor Point. For proprietary reasons, Phillips does not release its specific exploration plans or strategies. In general, however, we will look at any Cook Inlet drilling opportunity on a case by case basis and determine if it competes with Phillips' world-wide opportunities, including those on the North Slope.

8) What is your current assessment of South-central demand for gas over the next ten to twenty years? If you have pessimistic, optimistic and base cases, please generally describe each case?

The area utilities and the University of Alaska at Anchorage (UAA) generally provide demand forecasts for the South Central Area on an ongoing basis. In general, we do not see any significant variances around their forecasts at this time that would influence our business strategies.

9) We have heard that "deliverability", the ability to meet peak winter demand, may be a problem soon. Please discuss whether you see deliverability constraints in the next ten years. Please discuss what can be done to reduce any deliverability problem.

Gas demand in the Cook Inlet is very seasonal. For a period of a few days to perhaps several weeks in the winter, consumption peaks perhaps 30 – 40 % higher than that for the rest of the year. However, meeting these peak demands is not so much a function of reserves as a function of the capacity of wells and delivery facilities. To meet the peak winter demand, investments must be made that are underutilized at other times of the year. For example, in the Lower-48, Canada and Europe, investments have been made for "peak shaving": facilities specifically designed to supply gas during seasonal high demand. Common types of peak shaving are underground storage in converted reservoirs, LNG storage and facility capacity expansions such as additional compression. Typically,

these investments are made by the utilities, which have the ultimate responsibility to meet the peak gas demand of consumers. While such peak shaving facilities are common elsewhere, due to high deliverability, there has been little incentive for them in Cook Inlet.

Phillips believes that the tension of not over-investing, yet still meeting peak demands is something that the marketplace can and will ultimately solve through a variety of strategies. As a practical matter, as has been illustrated in numerous markets around the world, investments by the producers to increase peak deliverability must be balanced with development of true peaking facilities. Further, we understand Enstar has agreements in place with Unocal and Marathon to divert gas supplies to meet local peak requirements, should the need arise. In addition, Phillips is committed to working in support of Enstar's efforts to ensure that the needs of the community during critical periods are met.

10) Finally, do you have any recommended state legislation the committee should consider to advance development of natural gas related industry within the state?

Clearly, more frequent and wider lease sales and expedited permitting is an excellent policy. In addition, State support of increased federal lease sales in the potentially gas prospective lower Cook Inlet would also be appropriate.

Mr. Chairman this concludes my testimony. Thank you for the opportunity to present Phillips' views on Cook Inlet gas. I would be happy to answer any questions you may have.